CLAIMS

What is claimed is:

1. A flare pellet assembly for providing at least one of visual and infrared energy output, said flare pellet assembly comprising:

at least first and second ignitable flare pellets arranged in a stack.

2. A flare pellet assembly, as claimed in Claim 1, wherein:

at least one of said first and second ignitable flare pellets comprises a frustum.

3. A flare pellet assembly, as claimed in Claim 1, wherein:

at least one of said first and second ignitable flare pellets is substantially disk shaped.

4. A flare pellet assembly, as claimed in Claim 1, wherein:

said first and second ignitable flare pellets are substantially identical in size and design.

5. A flare pellet assembly, as claimed in Claim 1, wherein:

said first and second ignitable flare pellets are affixed to each other.

6. A flare pellet assembly, as claimed in Claim 1, further comprising:

means for substantially immobilizing said first ignitable flare pellet relative to said second ignitable flare pellet.

7. A flare pellet assembly, as claimed in Claim 1, further comprising:

a rod that extends through said first and second ignitable flare pellets.

8. A flare pellet assembly, as claimed in Claim 7, wherein:

at least one of said first and second ignitable flare pellets is affixed to said rod.

9. A flare pellet assembly, as claimed in Claim 7, further comprising:

means for preventing rotation of said first ignitable flare pellet relative to said rod.

10. A flare pellet assembly, as claimed in Claim 9, wherein:

said means comprises a protrusion associated with one of said first ignitable flare pellet and said rod, and a depression or groove complimentarily configured to accommodate said protrusion associated with another of said first ignitable flare pellet and said rod.

11. A flare pellet assembly, as claimed in Claim 7, wherein:

said rod comprises a stop at a first end of said rod and a threaded second end of said rod.

12. A flare pellet assembly, as claimed in Claim 11, further comprising:

a threaded fastener engaged with said threaded second end of said rod, and wherein said first and second ignitable flare pellets are disposed between said stop of said rod and said threaded fastener.

13. A flare pellet assembly for providing at least one of visual and infrared energy output, said flare pellet assembly comprising:

first and second flare pellets made of at least one ignitable material, wherein said first and second flare pellets are disposed along a longitudinal reference axis; and

a tapered groove defined between said first and second flare pellets, wherein said tapered groove tapers toward said longitudinal reference axis.

14. A flare pellet assembly, as claimed in Claim 13, wherein:

said tapered groove comprises an interior angle of between about 5° and about 35°.

15. A flare pellet assembly, as claimed in Claim 13, wherein:

said at least one tapered groove is annularly disposed about said longitudinal reference axis.

16. A flare pellet assembly, as claimed in Claim 13, wherein:

means for substantially immobilizing said first flare pellet relative to said second flare pellet.

17. A flare pellet assembly, as claimed in Claim 13, further comprising:

a rod that extends through said first and second flare pellets.

18. A flare pellet assembly, as claimed in Claim 17, wherein:

at least one of said first and second flare pellets is affixed to said rod.

19. A flare pellet assembly, as claimed in Claim 17, further comprising:

means for preventing rotation of said first flare pellet relative to said rod.

20. A method of assembling a flare pellet assembly, the method comprising the steps of:

forming an ignitable material into a first flare pellet and a second flare pellet;

forming a pellet assembly comprising a stack of said first and second flare pellets; and

disposing a casing about at least a portion of said pellet assembly.

21. A method, as claimed in Claim 20, wherein:

said forming step comprises at least one of pressing, extruding, casting, and forging said ignitable material.

22. A method, as claimed in Claim 20, further comprising:

substantially immobilizing said first flare pellet relative to said second flare pellet.

23. A method, as claimed in Claim 20, further comprising:

disposing a rod through said first and second flare pellets.

24. A method, as claimed in Claim 23, further comprising:

substantially immobilizing said first flare pellet relative to said rod.

25. A method, as claimed in Claim 24, further comprising:

substantially immobilizing said second flare pellet relative to said rod and said first flare pellet.

26. A flare pellet assembly for providing at least one of a visual and an infrared energy output, said flare pellet assembly comprising:

a non-granular, ignitable flare pellet, wherein said flare pellet exhibits a ratio of surface area measured in square inches to mass measured in grams of at least about 0.70.

27. A flare pellet assembly, as claimed in Claim 26, wherein:

said ratio is at least about 0.75.

28. A flare pellet assembly, as claimed in Claim 26, wherein:

said flare pellet exhibits a web thickness of no more than 0.2 inch.

29. A flare pellet assembly, as claimed in Claim 26, wherein:

said flare pellet has been at least one of pressed, extruded, cast, and forged.

30. A method of using a flare assembly, the method comprising the steps of:

providing an airborne flare pellet assembly, wherein said pellet assembly comprises an ignitable material comprising between about 40% and about 70% magnesium, and between about 20% and about 50% sodium nitrate; and

burning said pellet assembly at a rate sufficient to provide a visual light output reaching at least about 5.0 million candela.

31. A method, as claimed in Claim 30, wherein:

said burning step is accomplished at a rate sufficient to provide an infrared output reaching at least about 14,000 w/ster in a short infrared band between about 1.8μ and about 3.0μ.

32. A method, as claimed in Claim 30, wherein:

said burning step is accomplished at a rate sufficient to provide an infrared output reaching at least about 22,000 w/ster in a mid infrared band between about 3.0μ and about 5.5μ.

33. A method, as claimed in Claim 30, wherein:

said ignitable material comprises a plastic binder material.

34. A method of using a flare assembly, the method comprising the steps of:

providing an airborne flare pellet assembly, wherein said pellet assembly comprises an ignitable material comprising magnesium, polytetrafluoroethylene, and a fluoroelastomer; and

burning said ignitable material at a rate sufficient to provide a first infrared output of at least about 90,000 w/ster in a short infrared band between about 1.8μ and about 3.0μ.

35. A method, as claimed in Claim 34, wherein:

said burning step is accomplished at a rate sufficient to provide a visual light output of at least about 1.5 million candela.

36. A method of using a flare assembly, the method comprising the steps of:

providing an airborne flare pellet assembly, wherein said pellet assembly comprises an ignitable material comprising magnesium, polytetrafluoroethylene, and a fluoroelastomer; and

burning said ignitable material at a rate sufficient to provide a first infrared output of at least about 130,000 w/ster in a mid infrared band between about 3.0μ and about 5.5μ.

37. A method, as claimed in Claim 36, wherein:

said burning step is accomplished at a rate sufficient to provide a visual light output of at least about 1.5 million candela.

38. A method of using a flare assembly, the method comprising the steps of:

providing an airborne flare pellet assembly; and

burning said airborne flare pellet assembly at a rate sufficient to provide a first infrared output in a short infrared band between about 1.8μ and about 3.0μ and a second infrared output in a mid infrared band between about 3.0μ and about 5.5μ, wherein said burning step is accomplished at a rate sufficient for said first infrared output to reach at least about 90,000 w/ster and said second infrared output to reach at least about 130,000 w/ster.

39. A method, as claimed in Claim 38, wherein:

said burning step is accomplished at a rate sufficient to provide a visual light output of at least about 1.0 million candela.

40. A method of using a flare assembly, the method comprising the steps of:

providing an airborne flare pellet assembly; and

burning said airborne flare pellet assembly at a rate sufficient to provide a first infrared output of at least about 6,000 w/ster in a mid infrared band between about 3.0μ and about 5.5μ for a duration of at least about 2.0 seconds.

41. A method, as claimed in Claim 40, wherein:

said burning step occurs at a rate sufficient for said first infrared output to reach a peak infrared output of at least about 7,000 w/ster.

42. A method, as claimed in Claim 40, wherein:

said burning step is accomplished at a rate sufficient to provide a second infrared output of at least about 2,000 w/ster in a short infrared band between about 1.8μ and about 3.0μ during said at least about 2.0 seconds.